

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512



DATE: June 20, 2005

TO: Interested Parties

FROM: Marc Pryor, Compliance Project Manager

SUBJECT: Calpine Gilroy Cogen Project (84-AFC-4C)
Staff Analysis of Proposed Modifications to Change the Source of
Cooling Water from Well Water to Recycled Water

On April 11, 2005, the California Energy Commission received a petition from Calpine Gilroy Cogen, L.P. to amend the Energy Commission Decision for the Calpine Gilroy Cogen Project.

The Calpine Gilroy Cogen project is a 115 MW cogeneration power plant located in the City of Gilroy in the County of Santa Clara. The project was certified by the Energy Commission in 1985, and began commercial operation on September 18, 1988.

The proposed modifications will allow Calpine Gilroy Cogen, L.P. to change the source of power plant cooling water from wells to recycled wastewater from the South County Regional Wastewater Authority (SCRWA) facility located adjacent to the Cogen site. Modifications would include the construction of a pipeline approximately 1,000 feet long and ten inches in diameter. Located entirely on Calpine property, the proposed pipeline would connect with SCRWA's existing twelve-inch diameter pipeline located on Calpine's adjacent 135 MW Gilroy Energy Center's (GEC) property. The existing pipeline supplies SCRWA recycled water to the GEC. The proposed pipeline would be constructed almost entirely aboveground, with only a short section under an existing driveway that provides emergency access to the site.

Energy Commission staff reviewed the petition and assessed the impacts of this proposal on environmental quality, public health and safety, and proposes new conditions of certification to the technical areas of Cultural Resources, Public Health and Water Quality. Staff's analysis is enclosed, and it is staff's opinion that, with the implementation of the new conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The amendment petition has been posted on the Energy Commission's webpage at www.energy.ca.gov/sitingcases. Staff's analysis and the order (if the amendment is approved) will also be posted on the webpage. Energy Commission staff intends to recommend approval of the petition at the July 13, 2005 Business Meeting of the

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Energy Commission. If you have comments on this proposed modification, please submit them to me at the address below prior to June 12, 2005:

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California Energy Commission
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Comments may be submitted by fax to (916) 654-3882, or by e-mail to mpryor@energy.state.ca.us. If you have any questions, please contact Marc Pryor, Compliance Project Manager, at (916) 653-0159.

Enclosure: Staff Analysis

Mail List: #794

Calpine Gilroy Cogeneration Project (84-AFC-4C)
Petition to Install a Recycled Water Pipeline
Cultural Resources Staff Analysis
Prepared by Dorothy Torres
June 20, 2005

AMENDMENT REQUEST

This amendment involves the cultural resources technical area because the proposed construction of approximately one thousand feet of above ground recycled water pipeline would occur in an area sensitive for archaeological and historical resources. The pipeline would be placed within the property boundaries of the previously permitted Gilroy Energy Center (GEC) and Gilroy Cogen.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

At the time of certification, LORS applicable to Cultural Resources were identified in Staff's Final Staff Assessment. These LORS will continue to apply to the amended project, and no new LORS have been identified.

ANALYSIS

The California Environmental Quality Act Guidelines (Title 14, California Code of Regulations, §15064.5 (f)) states that pursuant to Public Resources Code 21082, a lead agency should make provisions for cultural resources accidentally discovered during construction. Previous ground disturbance in the vicinity of the proposed route of the waterline unearthed prehistoric and historic cultural resources material.

A variety of cultural resources were identified during the excavation and trenching for GEC Phase I and ground disturbance necessary to construct the Zero Liquid Discharge Unit (ZLD). Both historic and prehistoric artifacts have been observed during ground disturbance for the GEC Phase I and the ZLD. The proposed waterline route will extend through these areas.

Installation of the proposed above-ground recycled waterline will use above-ground supports that will be placed approximately every five feet. A back-hoe will dig holes 12 inches deep and 21 inches wide and the supports will be inserted into concrete footing poured into the holes. (E-mail from Eugene Fahey to Marc Pryor 4/19/05). This proposed ground disturbance has the potential to disturb previously undiscovered resources.

A portion of the proposed waterline will cross an access road. The trench will be dug to a depth of not more than three feet and will have a width of 16 to 18 inches across the access road. These varied types of ground disturbance may impact cultural resources present along the waterline.

Calpine Gilroy Cogen and GEC are situated on natural levee deposits (ZLD Amendment Doc p. 3-49) which were often favored as prehistoric habitation sites and the project locations have been referenced in several memos by Dr. Davy as a historic farm site. It is likely that during this additional ground disturbance, cultural material will be unearthed. Any cultural material discovered during work for the Gilroy Cogen reclaimed waterline may contribute to information from deposits discovered during prior ground disturbance from the projects.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

During the ground disturbance and excavation for the GEC ZLD, both a deposit of historic material was discovered and additional cultural material was identified. Also, cultural materials were identified during the ground disturbance phases of the GEC construction. Staff believes that requiring cultural resources monitoring where ground disturbance extends below fill, and during trenching through an access road, are appropriate mitigation measures that would avoid or lessen impacts to less than significant levels.

CONCLUSIONS AND RECOMMENDATIONS

Staff believes that the proposed amendment has the potential to significantly impact cultural and historic resources. To avoid or lessen impacts to cultural resources to less than significant levels, staff recommends the addition of one new condition of certification, CUL 4-7, that requires limited monitoring for the specific situations of excavation in areas that extend beyond fill, and when trenching across an access road. Otherwise, staff would be proposing a change to existing condition CUL 4-2 which would impose full time monitoring at all times during construction of the pipeline. Staff believes such a proposal is unnecessary and wasteful. Staff does believe the Energy Commission should make it clear to the project owner that all previously adopted conditions of certification are required to be complied with as well.

Therefore, staff recommends that the Energy Commission approve the proposed amendment with the adoption of staff's proposed condition CUL 4-7.

PROPOSED CULTURAL RESOURCES CONDITION OF CERTIFICATION

CUL 4-7 The project owner shall ensure that the Cultural Resources Specialist (CRS) or Cultural Resources Monitor (CRM) (selected by and reporting to the CRS), monitors the installation of waterline supports where excavation extends beyond fill. Excavation of the trench through the roadway shall also be monitored full-time for cultural resources by the CRS or CRM. Monitoring logs shall be kept and maintained by the on-site monitor. The CRS shall inform the CPM when ground disturbance activities no longer require

monitoring, and will explain his/her decision that monitoring is no longer necessary.

Verification: During each week that monitoring occurs, monitoring logs shall be submitted to the CPM, on a form acceptable to the CPM, for review and approval. Within 24 hours of making a determination that cultural resources monitoring is no longer required, the CRS shall submit an e-mail explanation to the CPM for review and approval.

Calpine Gilroy Cogeneration Project (84-AFC-4C)
Petition to Install a Recycled Water Pipeline
Public Health Staff Analysis
Prepared by Obed Odoemelam, Ph.D.
June 20, 2005

AMENDMENT REQUEST

Calpine Gilroy Cogen is seeking approval to utilize recycled water from the South County Regional Wastewater Authority, Santa Clara County for facility cooling instead of the well water currently being used. The quality of this wastewater would be up to the standards in Title 22 of the California Code of Regulations with respect to particulate matter and other potentially toxic substances and thus appropriate for this proposed use.

BACKGROUND

One potentially significant impact of the proposed amendment would be human exposure to the pollutants mostly associated with the cooling tower drift and emitted particulate matter. Another potential hazard would be human exposure to pathogenic microorganisms in the cooling water. The most significant of these pathogens is the Legionella bacterium.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

At the time of certification, LORS applicable to Public Health were identified in Staff's Final Staff Assessment. These LORS will continue to apply to the amended project, and no new LORS have been identified.

ANALYSIS

The permitted maximum drift of 240 lb/hr and particulate emission rate of 0.72lb/hr would be maintained for the proposed Title 22-quality recycled water, reflecting the potential lack of significant health impacts from emission of the particulate matter from the cooling tower. The hazard from the Legionella bacterium usually depends on the number of bacteria in the water. This number (assessed in terms of concentration of the bacterium per unit water volume) is usually minimized by treatment with antibacterial agents established as effective for Legionella and similar bacteria; therefore, staff recommends the additional Public Health Condition of Certification (PH 2-4 below).

CONCLUSIONS AND RECOMMENDATIONS

Staff has established that the particulate and other emissions from using treated wastewater in the cooling tower would not pose a significant health hazard to any individuals within or around the project. Staff's recommended Condition of

Certification (PH 2-4) should be adequate to minimize the noted risk of human exposure to the Legionella bacterium. Staff believes that the implementation of the existing Conditions of Certification together with the new Condition would be adequate to ensure that the Gilroy Cogeneneration facility would be unlikely to pose an additional health risk during operations.

PROPOSED PUBLIC HEALTH CONDITION OF CERTIFICATION

PUBLIC HEALTH 2-4 The Project Owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is controlled to industry standards. The plan shall be consistent with the requirement of either staff's "Cooling Water Management Program Guidelines" or the guidelines in the Cooling Technology Institute's "Best Practices for the Control of Legionella".

Verification: Within 30 days of approval of this amendment to utilize recycled wastewater for cooling purposes, the project owner shall provide the Cooling Water Management Plan to the California Energy Commission's Compliance project Manager for review and approval.

Calpine Gilroy Cogeneration Project (84-AFC-4C)
Petition to Install a Recycled Water Pipeline
Water Quality Staff Analysis
Prepared by Natasha Nelson
June 20, 2005

AMENDMENT REQUEST

Gilroy has requested permission to use Title 22 recycled water for their cooling tower make-up. The petition included an analysis of the project's potential impacts to Soil and Water Resources. Staff issued information requests in response to the amendment, including the submittal of: 1) A will serve-letter from the recycle water producer; 2) A description of the cooling tower blowdown equipment; and 3) A description of drift eliminators on the cooling towers. Staff received answers to these requests on April 20, 2005.

Staff has reviewed the Amendment materials, the Conditions of Certification from the Commission Decision for the original Gilroy Cogen (84-AFC-4). Staff has further reviewed any changes in laws, ordinances, regulations and standards (LORS), the environment, and the project. Based upon review of these materials, staff concludes the proposal provides a benefit to state water supply. The project will comply with all LORS provided that Conditions of Certification Soil and Water Condition -3 and -4 are added as conditions for the project.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

The LORS referenced in the Commission Decision are applicable to this proposed amendment. The amendment was reviewed for consistency against the new regulations relating to the use of recycled water, and the analysis is presented below.

Recycling Act of 1991

The California legislature's Water Recycling Act of 1991 (Water Code § 13575 et seq.). This Act makes the following findings and declarations.

- State is subject to periodic drought conditions;
- The development of traditional water resources in California has not kept pace with the State's population which is growing at the rate of over 700,000 per year and is anticipated to reach 36 million by the year 2010;
- There is a need for a reliable source of water for uses not related to the supply of potable water to protect investments in agriculture, green belts, recreation, to

replenish ground water basins, and to protect and enhance fisheries, wildlife habitat, and riparian areas;

- The environmental benefits of reclaimed water include a reduced demand for water in the Sacramento-San Joaquin Delta, reduced discharge of waste into the ocean, and the enhancement of ground water basins, recreation, fisheries, and wetlands;
- The use of reclaimed water has proven to be safe, and the State DHS is updating regulations for its use;
- The use of reclaimed water is a cost-effective, reliable method of helping to meet California's water supply needs;
- The development of the reclaimed water infrastructure will provide jobs and enhance the economy of the state;
- Retail water suppliers and reclaimed water producers and wholesalers should promote the substitution of reclaimed water for potable and imported water in order to maximize the appropriate cost-effective use of reclaimed water in California;
- Reclaimed water producers, retail water suppliers, and entities responsible for ground water replenishment should cooperate in joint technical, economic, and environmental studies, as appropriate, to determine the feasibility of providing reclaimed water service;
- Retail water suppliers and reclaimed water producers and wholesalers should be encouraged to enter into contracts to facilitate the service of reclaimed and potable water by the retail water suppliers in their service areas in the most efficient and cost-effective manner; and
- Reclaimed water producers and wholesalers and entities responsible for ground water replenishment should be encouraged to enter into contracts to facilitate the use of reclaimed water for ground water replenishment if reclaimed water is available and the authorities having jurisdiction approve its use.

Wholesale prices set by reclaimed water producers and reclaimed water wholesalers should reflect an equitable sharing of the costs and benefits associated with the development and use of reclaimed water.

Water Recycling Criteria

Under Title 22 of the California Code of Regulations § 60301 et seq., the California Department of Health Services (DHS) reviews and approves wastewater treatment

systems to ensure they meet tertiary treatment standards allowing use of reclaimed water for industrial processes such as steam production and cooling water. California Title 22 recognizes that there are different recycled water uses, and depending on the risk of human contact, different treatment standards are permissible. For industrial cooling, Title 22 recycled water needs to be at a minimum, disinfected secondary-23 (Most Probable Number of 23 coliform bacteria/100ml). For unrestricted use of recycled water, such as in a distribution network serving multiple users, tertiary treatment is required to meet a standard of 2.2 MPN/100 ml. Title 22 also regulates wastewater treatment system reliability, requiring a combination of redundant processes, back-up power supplies, and/or storage to provide high reliability.

ANALYSIS

Setting

The power plant site is located in Santa Clara County. The power plant currently uses groundwater wells to supply its cooling water supply, process water, and service water. The power plant has a will-serve request for 800 gallons per minute for the hours of 6 a.m. to 10:00 pm with the South County Regional Wastewater Authority (SCRWA).

The SCRWA recycled water facility already serves as the cooling water supply for the adjacent 135 MW Calpine Gilroy Energy Center. The SCRWA has a Central Coast Regional Water Quality Control Board permit to provide recycled water to users and can divert up to three million gallons per day of tertiary treatment process water to users (CCRWQCB 1998). The project will tap into the recycled water supply line at their project boundary.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

To connect to a recycled water source, the project would need to construct approximately 1,000 feet of aboveground pipeline. The site has had previous soil disturbance, and no waters of the U.S. will be impacted by the construction. The suite of potential impacts to soil and water resources from the construction and operation of the recycled water pipeline were found to be insignificant and no mitigation is required beyond compliance with existing conditions of certification.

The cooling tower blowdown will be routed to the adjacent Gilroy Foods. Gilroy Foods is permitted to dispose of all process wastewater using field application. Since this is not a change from current operating procedure at the plant, staff does not have additional conditions for disposal of wastewater.

The use of recycled water requires the use of drift eliminators on all cooling towers. Calpine confirms that the cooling tower does have drift eliminators. No additional conditions are necessary.

The Commission's 2003 Integrated Energy Policy Report (IEPR) provides that "...the Commission will approve the use of fresh water for cooling purposes ...only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound." (2003 IEPR, p. 41.) Economically unsound is defined as economically or otherwise infeasible. Feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. Because the Amendment is proposing the use of a recycled water source, it is consistent with the Energy Commissions policy and will indeed provide benefits to the state water supply overall. The proposal is also consistent with new state regulations on recycled water.

CONCLUSIONS AND RECOMMENDATIONS

Compliance with of all the Conditions of Certification as found in the Commission Decision are required to ensure continued compliance with LORS, and/or to ensure that impacts of Gilroy Cogen will not have any significant impact on the environment. Staff recommends two new Conditions of Certification, Water Quality 6-9 and 6-10. These are required to reflect the new amendment's new water supply.

The Energy Commission manages a data collection system which contains the information necessary to develop a series of legislatively-mandated policy reports and analysis. Our policy reports include the Integrated Energy Policy Report (IEPR) prepared every two years for the Governor's approval. The latest IEPR was released in 2003 (IEPR 2003). Because water use is an important aspect of the energy footprint, the Energy Commission has been requiring the submittal of monthly and annual water use to the data collection system through Conditions of Certification since 2002. This project is required to submit the data as Condition of Certification Water Quality 6-10.

PROPOSED WATER RESOURCES CONDITION OF CERTIFICATION

WATER QUALITY 6-9 The project owner shall use tertiary-treated water supplied from South County Regional Wastewater Authority as its primary water supply source for cooling. Water from the on-site well system may be used as a back up supply for the cooling purposes in the event that recycled water services is interrupted.

Verification: The project owner shall notify the CPM in writing if recycled water from South County Regional Wastewater Authority is unavailable for more than thirty (30) consecutive days.

WATER QUALITY 6-10 The project owner shall meter in-plant uses of recycled water. The project owner shall prepare an annual summary, which will include

.the monthly range and monthly average of daily water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual summary will also include the yearly range and yearly average water use by the project. This information will be supplied to the CPM.

Verification: The project owner will submit as part of its annual compliance report a water use summary to the CPM on an annual basis for the life of the project.